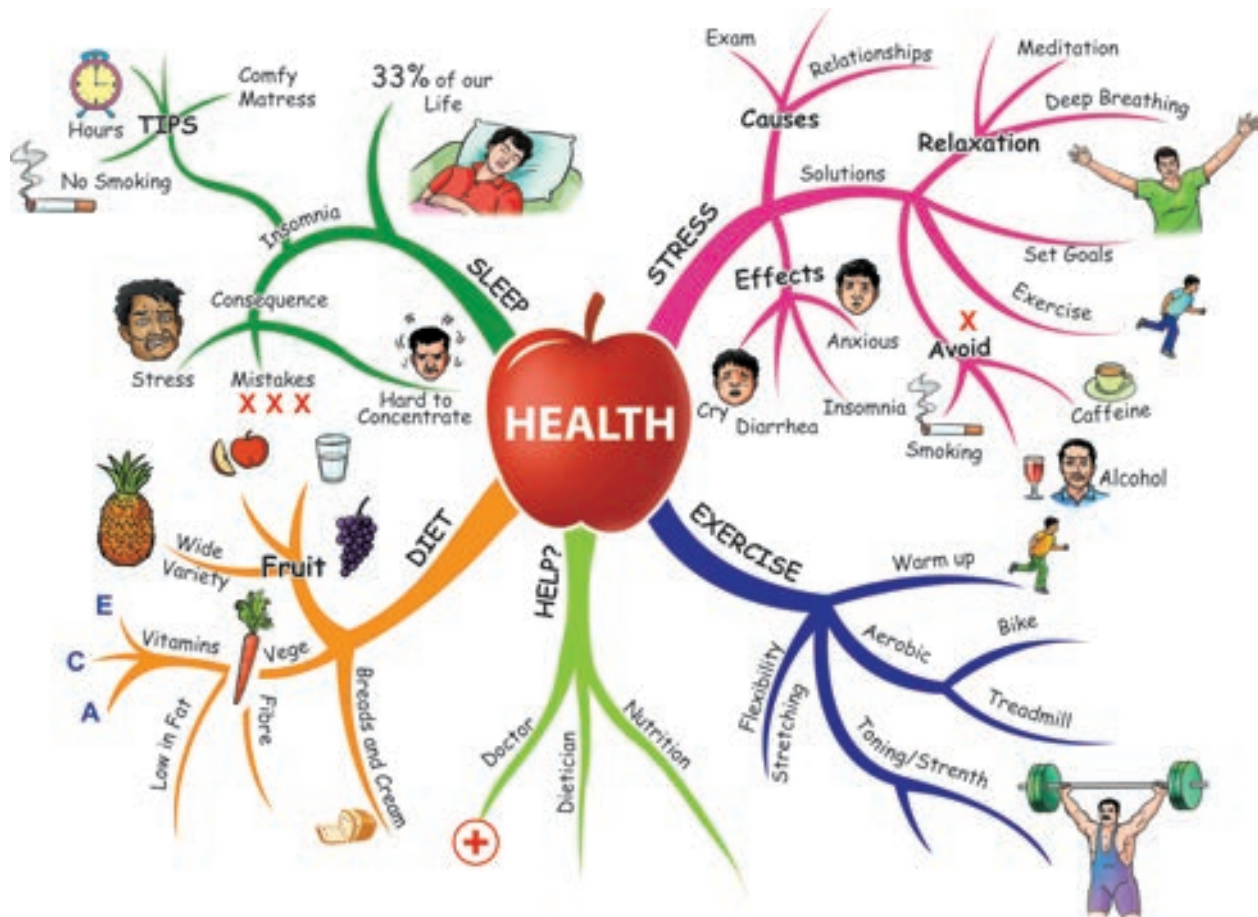




Unit

6

Health and Hygiene



Learning Objectives

- ❖ To classify the different components of food.
- ❖ To evaluate the importance of nutrients present in food.
- ❖ To know about balanced diet.
- ❖ To list out the deficiency diseases.
- ❖ To describe personal hygiene.
- ❖ To differentiate the diseases caused by bacteria and virus.

Introduction

The word 'health' refers to a state of complete emotional and physical well-being. Healthcare exists to help people maintain this optimal state of health.

As defined by World Health Organization (WHO), 'health is a state of complete physical, mental, and social well being, and not merely the absence of disease or infirmity'. Health is a dynamic condition resulting from a body's constant adjustment and adaptation in response to stresses and changes in the environment for maintaining an inner equilibrium called homeostasis.

Hygiene is a science of establishment and maintenance of health conditions or practices (as of cleanliness) conducive to health. Brushing your teeth regularly is an important part of good oral hygiene. Hygiene is defined as the practice of keeping yourself and your surroundings clean, in order to prevent illness or the spread of diseases.

6.1 Components of Food

Deepa's family was preparing their monthly provision list.

Provision List

Raw rice	25 Kg
Wheat	5 Kg
Pigeon pea	2 Kg
Green gram.....	1 Kg
Black gram.....	2 Kg
Cooking oil.....	2 Lt
Ghee	500 gm

When Deepa saw the list, she had some questions to ask her parents. Why do we eat comparatively more amount of rice and wheat? Why do we consume less amount of oil and ghee? Discuss about the given list with your teacher.



Activity 1

Identify the following food items and complete the table given below.



Brinjal



Chocolate



Lady's finger



French fries



Ragi



Orange



Guava



Spinach



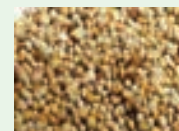
Moringa Leaves



Gooseberry



Burger



Pearl millet

Food which I like to eat	Food which I don't like to eat	Food which I have never seen before

1. Do your favorite foods make you healthy?
2. Do you choose your food by taste or by its nutritive value?

The chemical constituents of food which give us energy, help to build our body and protect us from diseases are called nutrients. The important nutrients are:

1. Carbohydrate
2. Proteins
3. Fats
4. Vitamins
5. Minerals
6. Water.

Activity 2

Collect as many food items as you can and classify them according to the major nutrient content in them.

Carbohydrates

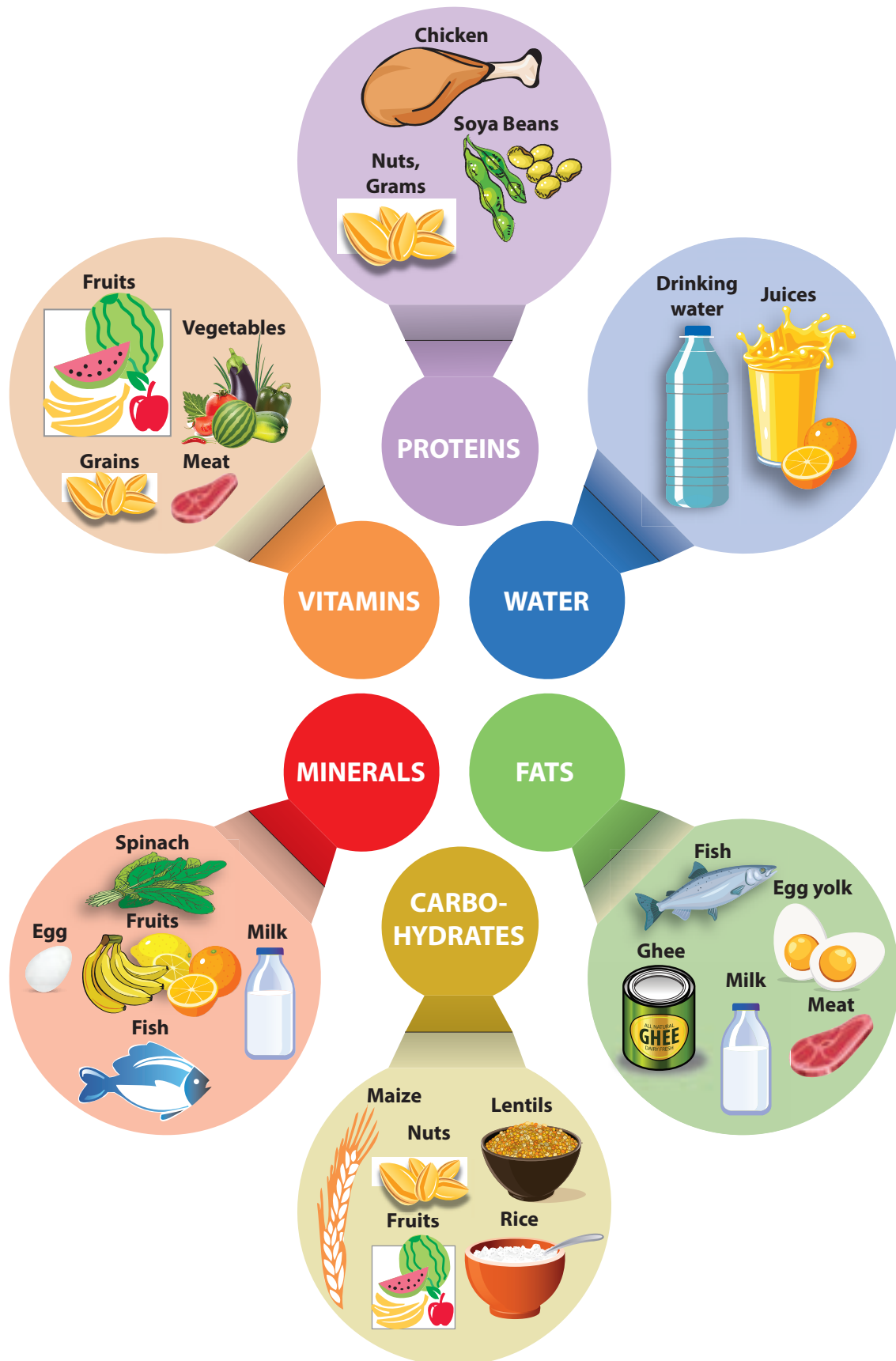
Carbohydrates are energy giving component of the food.

Table 1 Forms of Carbohydrates

Form of Carbohydrates	Sources
Sugar	Fruits, Honey, Cane Sugar, Beetroot
Starch	Rice, Maize, Potato, etc.
Dietary fibre	Whole grain, nuts, etc.

We can obtain carbohydrates in the form of sugar, starch and dietary fibres.

NUTRIENTS



Activity 3

Aim:

To test the presence of Carbohydrate as Starch in the given food item.

What do you need?

Boiled potato, dropper and dilute Iodine solution

How to do?

Smash the boiled potato.

Add two or three drops of dilute Iodine solution on the sample

What do you observe?

The potato turns blue-black in colour.

What do you infer?

Iodine reacts with starch to form Starch-Iodine complex which is blue-black in colour. Thus, the appearance of blue-black colour confirms the presence of starch in the food item



Whole grains

Fats

Fat is also an energy-giving food and it provides more energy than Carbohydrates. Some important sources of fats are butter, ghee, milk, cheese, paneer, nuts, meat, fish, egg yolk etc. Apart from giving energy, they insulate our body and protect the cells.



Egg yolk



Red meat

Activity 4

Aim:

To test the presence of Fat in the given food item.

What do you need?

Coconut oil, groundnut oil, and any paper.

How to do?

Pour few drops of oil onto the paper and rub it gently with your finger.

In case of ground nut, crush the groundnut and place it on a paper. Now rub the groundnut on the paper.

What do you see?

The paper turns translucent and becomes greasy.

What do you learn?

The given food sample contains fat.

Protein

Proteins are necessary for our growth as well as for regulating various body functions such as digestion. The sources of proteins are pulses, eggs, fish, milk, chicken, soya bean, nut, grams etc, Proteins are body building foods.



Sprouted pulses



Boiled egg white



Soyabeans



Soyabean is the highly rich source of protein.

Activity 5

Aim:

To test the presence of Protein in the given food item.

What do you need?

Egg white, Copper sulphate solution, Sodium hydroxide, Test tube and Bunsen burner.

How to do?

Take a small amount of the food sample (egg white) and put it in the test tube.

Add some water to the test tube and shake it.

Next, heat the test tube for about one minute. After the test tube is cooled down, add two drops of Copper sulphate solution and Sodium hydroxide solution to it.

What do you see?

The food sample turns purple or violet.

What do you learn?

Change in colour of the given food sample into purple or violet confirms the presence of Protein.

Vitamins

Vitamins are required for carrying out various biochemical reactions in our body. Fruits, vegetables, grains and meat products are good sources of vitamins. Vitamins are called as protective food. There are six major vitamins like A, B, C, D, E and K. Vitamin B and Vitamin C are water soluble. Vitamins A, D, E and K are fat soluble.

VITAMINS

Types, Functions and Deficiency diseases

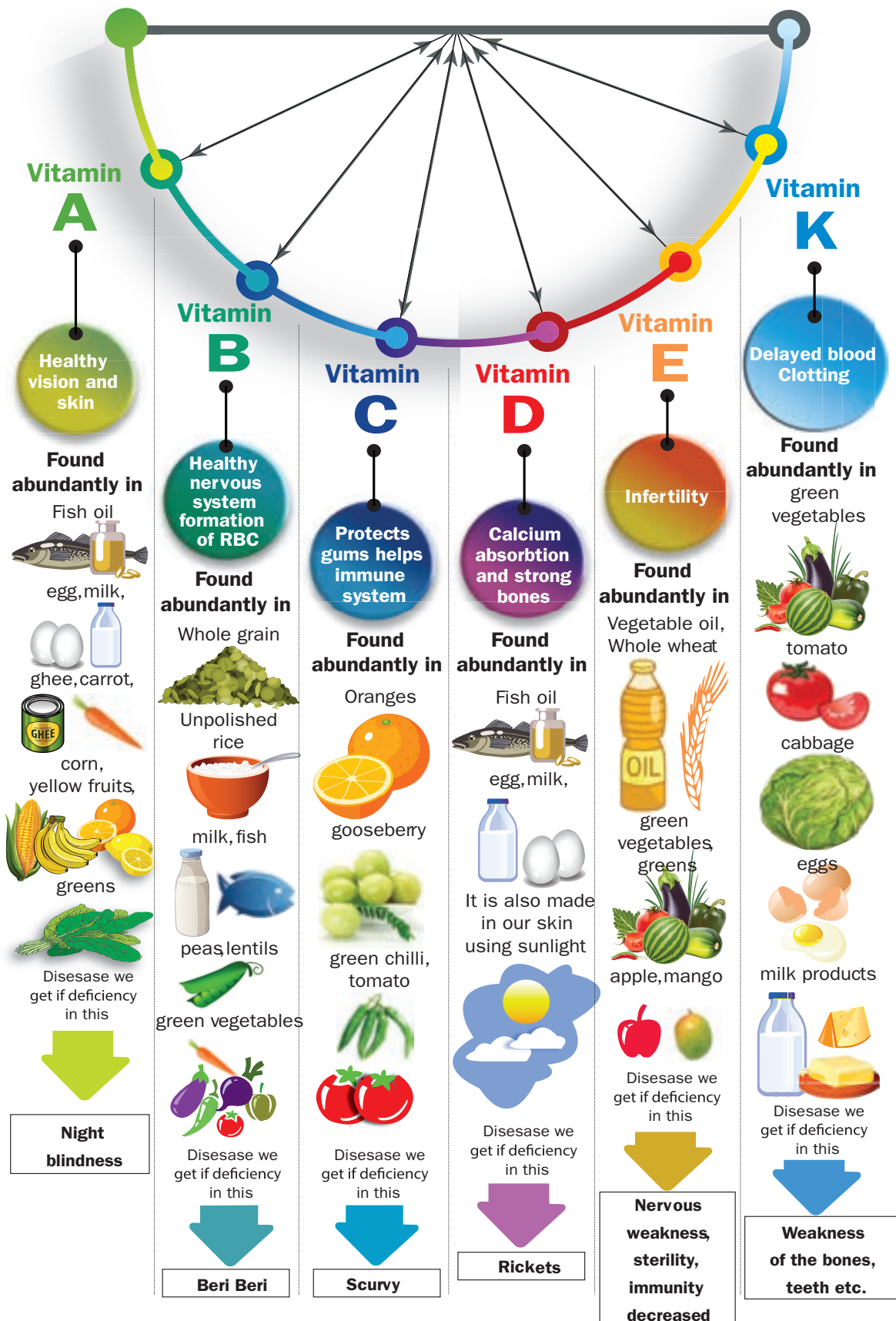


Table 2 Deficiency Diseases

Vitamin	Sources	Disease deficiency	Symptoms
Vitamin A	Fish oil, Egg, Milk, Ghee, Carrot, Corn, Yellow fruits, Greens	Night blindness	Poor vision, difficulty of sight in dim light.
Vitamin B	Whole grain, Unpolished rice, Milk, Fish, Meat, Peas, Lentils Green vegetables	Beriberi	Nerve weakness, Fatigue.
Vitamin C	Oranges, Gooseberry, Green chilly, Tomato	Scurvy	Bleeding gums
Vitamin D	Fish oil, milk and eggs. It is also produced by our skin using sunlight	Rickets	Weak and flexible bones
Vitamin E	Vegetable oils, Green vegetables, Whole wheat, Mango, Apple, Greens	Nerve weakness, Vision deterioration	Sterility, lack of resistance power to illnesses
Vitamin K	Green vegetables, Tomato, Cabbage, Eggs, Milk products.	Weakness of the bones, teeth etc.	Profuse bleeding after a small injury



Gooseberries contains nearly 20 times Vitamin C than Orange.

Just Think

A medical camp was conducted in a school. Most of the children were healthy. Some students had some health issues

Priya had bleeding gums.

Raja could not see clearly in dim light.

Arun had bent legs.

Can you guess what could be the reasons?

Fact File

Sun screen lotion reduces your skin's ability to produce Vitamin D by upto 95% which may lead to Vitamin D deficiency.

Activity 6

Make your food little healthier.
What do you need?

A small cup of green gram seeds, water and thin cloth.

How to do?

Soak the green gram seeds in water over night.

Take out the seeds and strain the water.

Wrap the seeds in wet thin cloth.

Keep it for a day or two.

Sprinkle some water whenever it is dry.

What do you see?

You can see white sprouts coming out of the seeds.

What do you learn?

Green gram sprouts are low in calories, have fibre and Vitamin B. They have comparatively high amount of Vitamin C and Vitamin K.

Minerals

Minerals are required for growth as well as for the regulation of normal body function. Green leafy vegetables like spinach, pulses, eggs, milk, fish and fruits are important sources of minerals. Minerals are also a protective foods.

Table 3 Minerals and their Functions

Minerals	Functions
Calcium	Strong bones and teeth, Clotting of blood
Phosphorus	Strong bones and teeth
Iodine	Synthesis of thyroid hormone
Iron	Formation of haemoglobin and brain development



80% of the Moringa leaves in the world are produced in India. The major countries which import Moringa leaves are China, US, Germany, Canada, South Korea and European countries.

Fact File

Moringa leaves are rich in

Vitamin A

Vitamin C

Potassium

Calcium

Iron and

Protein.

They also contains powerful anti-oxidants



Water

Our body needs an adequate supply of water in order to maintain good health. Any human being should take minimum eight tumblers (2 Litres) of water every day.

Activity 7

Complete the following table

S.No.	Nutrients	Sources	Functions
1	Carbohydrates	Rice,Wheat,Potato	
2	Fats		Give us energy
3	Proteins		
4	Vitamins	Fruits, Vegetables, Grains, Meat and Dairy products	
5	Minerals		Regulation of growth and normal body function

6.2 Health and Nutrients

Look at the pictures given below. Mark ☒ for healthy persons and mark ☐ for unhealthy persons.

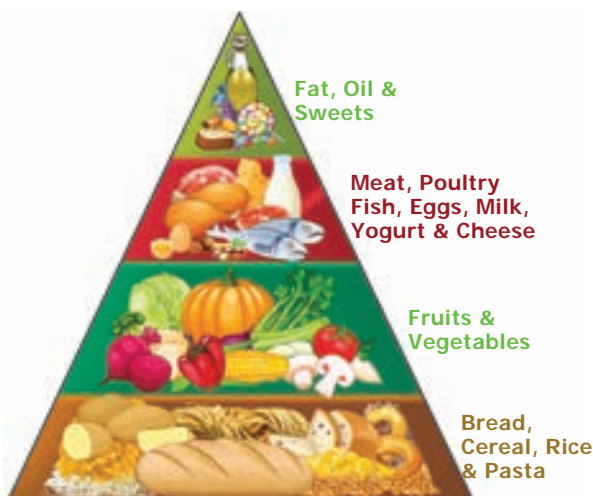
☐☐☐☐☐

Health is a state of complete physical, mental and social well-being and not merely absence of diseases. Eating a healthy diet keeps you physically and mentally fit. When you are physically healthy, you feel confident, you are more outgoing and have a greater capacity for enjoying life.

Unhealthy food choices lead to obesity and illness, preventing you from socializing with friends and family. So choose your diet carefully.

Balanced Diet

A diet should contain adequate amount of all the necessary nutrients required for healthy growth and activity.



Food Pyramid

A balanced diet contains sufficient amount of various nutrients to ensure good health. Balanced diet is important for the following reasons.

- It increases the capacity to work.
- It gives good physical and mental health.
- It increases the capacity to resist diseases.
- It helps in proper growth of the body.

Activity 7

Prepare a diet chart to provide balanced diet to a 12 year old boy/girl. The diet chart should include food item which are not expensive and are commonly available in your area.

Malnutrition

When your diet is not balanced, what would be the consequence? Observe the below picture carefully.

- Do these children look normal?
- Guess, what would be the reason.



Kwashiorkor



Marasmus

These children do not have normal health because of malnutrition.

Malnutrition occurs when all the nutrients that the body needs are not obtained in the proper proportions from the diet. The word malnutrition refers to the condition that results when a person does not take a balanced diet. Malnutrition leads to deficiency diseases. The diseases that are caused due to lack of nutrients in the diet are called deficiency diseases.



India has the second largest number of obese children in the world after China. According to a study it has been found that 14.4 million children in the country have excess weight.

Table 5 Protein deficiency diseases

Deficiency Diseases	Symptoms
Kwashiorkor	Stunted growth, Swelling of face, limbs and belly, Diarrhoea.
Marasmus	Skinny appearance, Slow body growth.

Table 6 Mineral deficiency diseases

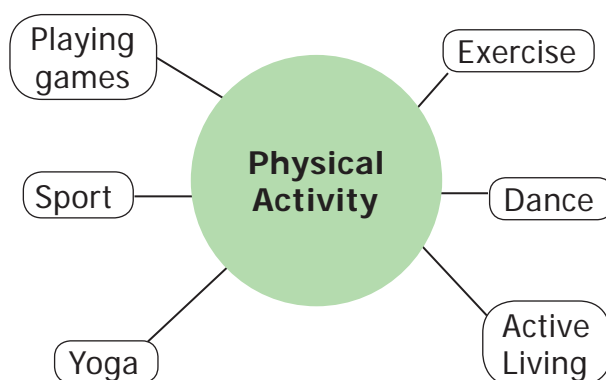
Mineral	Deficiency Disease
Calcium	Rickets
Phosphorus	Osteomalatia
Iodine	Cretinism (in child) Goitre (in adult)
Iron	Anaemia

Activity 8

Visit a nearby Anganwadi centre and find the steps taken by the government to overcome malnutrition and ensure health in the age group 0-5 years.

Physical Exercise

Physical exercise is any bodily activity that enhances or maintains physical fitness and overall health and wellness.



Physical activity is important for many reasons, including:

- increasing growth and development.
- strengthening muscles and the cardiovascular system.

- developing athletic skills, weight loss or maintenance, and enjoyment.

Physical exercise may help to decrease some of the effects of childhood and adult obesity.

Rest

Proper amount of rest is essential for physical and mental health. Rest is as important as nutrition and physical activity for growth and development and good health.



Discuss with Friends

“ Early to bed and early to rise make a man healthy, wealthy and wise”

Benjamin Franklin

Personal Cleanliness

Hygiene is a set of practices performed to preserve health. According to the World Health Organization (WHO), “hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases”.

Personal hygiene involves those practices performed by an individual to care for one’s bodily health and well being, through cleanliness. It includes



such personal habit choices as how frequently we bathe, wash hands, trim fingernails, and change clothing. It also includes attention to keep surfaces in the home and workplace, including bathroom facilities, clean and pathogen-free.

Activity 9

One day Rahim, a class six boy vomited three times. He was looking tired and dehydrated. His mother who is working as a nurse prepared a solution and gave it to him to drink. He felt better after sometime and asked his mother what the solution was. His mother told that it is Oral Rehydration Solution (ORS). Shall we know what an ORS is?

Vomiting or loose motions result in loss of water and cause salt imbalance in the body. Loss of water (dehydration) can lead to serious problems. This can be prevented by consuming ORS at short intervals.

Follow the steps to make ORS at home.

- Take a litre of boiled water and cool it.
- Add half a teaspoon of salt and six teaspoons of sugar to it.
- You can also add a few drops of lemon juice to it. Stir it and give it to the person suffering from vomiting, loose motion or dehydration.

Table 6 Personal Hygiene and Frequency of Cleanliness

Components	Recommended frequency of cleaning
Eye hygiene	Every morning and whenever the face is dirty.
Hair hygiene	Weekly twice preferably once in every other day.
Body hygiene	Once or twice a day.
Oral hygiene	Brushing twice a day. Rinsing after each meal.
Feet hygiene	Every day
Hand hygiene	Every time after touching contaminated surfaces. Every time before eating and touching clean surfaces.
Clothe hygiene	Once or twice a day.

6.3 Introduction to Microbes

When you neglect personal hygiene, you are increasing the risk of falling sick. Let us name some of the diseases or conditions caused by microorganism due to the negligence of personal hygiene.

1. Diarrhoea
2. Tooth decay
3. Athlete's foot (Madurai's foot)
4. Dandruff.

Do you believe that there are some organisms which you cannot see with your naked eye? Yes. microbes can not be seen without the help of a microscope.

Most of the microbes belong to four major groups.

- Bacteria
- Virus
- Protozoa
- fungi



Bacteria

Bacteria are very small prokaryotic microorganisms. Bacterial cells do not have nucleus and do not usually have membrane bound organelles.

- Bacteria can exist either as independent organisms or as parasites.
- They invade tissues.
- They produce pus or harmful wastes.



Disease

Disease is a definite pathological process having a characteristic set of signs and symptoms.

Disorder

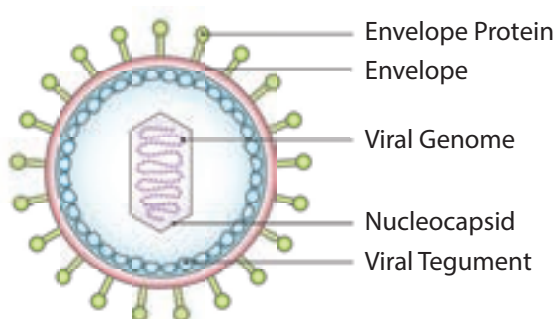
Disorder is a derangement or abnormality in function.

Table 7 Bacterial Diseases

S.No	Bacterial diseases	Mode of transmission
1	Cholera	Contaminated water
2	Pneumonia	Inhalation of airborne droplets from a sneeze or cough.
3	Tetanus	Contamination of wounds with the bacteria.
4	Tuberculosis	Inhalation of airborne droplets from a sneeze or cough.
5	Typhoid	Contaminated food or water

Virus

Virus is an infective agent that typically consist of nucleic acid molecule in a protein coat. It replicates only inside the cells of other living organisms. Virus can infect all types of life forms like plant, animals and microorganisms. They invade living normal cells and use their cell machinery to multiply. They can kill, damage or change the cells and make you sick.



A Virus that contains R.N.A. instead of D.N.A. is called a Retrovirus

Diseases caused by Virus

1. Common cold
2. Influenza
3. Hepatitis
4. Polio
5. Smallpox
6. Chicken pox
7. Measles

Discuss in your classroom

Is virus a living thing or non living thing?

Suggested project

Get a vaccination schedule from a nearby doctor or a hospital. From the list, identify the bacterial diseases and the viral diseases for which vaccination is given.

Points to Remember

- ❖ There are six nutrients. They are: Carbohydrate, Fats, Protein, Vitamins, Minerals and Water
- ❖ Kwashiorkor and Marasmus are protein deficiency diseases.
- ❖ Night blindness, scurvy, rickets and beriberi are vitamin deficiency diseases.
- ❖ Bacteria is a prokaryotic microorganism.
- ❖ Cholera, typhoid and pneumonia are bacterial diseases.
- ❖ Influenza, common cold and chicken pox are viral diseases.

Evaluation



I. Choose the correct answer.

1. Our body needs _____ for muscle building.
a) carbohydrate b) fat
c) protein d) water
2. Scurvy is caused due to the deficiency of _____.
a) Vitamin A b) Vitamin B
c) Vitamin C d) Vitamin D
3. Calcium is an example for
a) carbohydrate b) fat
c) protein d) minerals
4. Bacteria are very small _____ microorganism.
a) prokaryotic b) eukaryotic
c) protozoa d) acellular

5. We should include fruits and vegetables in our diet, because_____.
- a) they are the best source of carbohydrates
- b) they are the best source of proteins
- c) they are rich in minerals and Vitamins
- d) they have high water content

II. State True or False. If false, write the correct statement.

1. There are three main nutrients present in food.
2. Fats are stored as energy by our body.
3. All bacteria have flagella.
4. Iron helps in the formation of haemoglobin.
5. Virus can grow and multiply outside host.

III. Fill in the blanks.

1. Malnutrition leads to _____.
2. Iodine deficiency leads to _____ in adults.
3. Vitamin D deficiency causes _____.
4. Typhoid is transmitted due to contamination of _____ and water.
5. Influenza is a _____ disease.

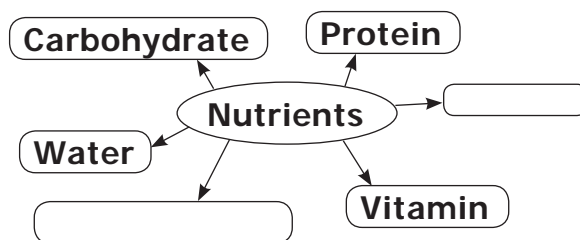
IV. Complete the analogy.

1. Rice : Carbohydrate :: Pulses :_____.
2. Vitamin D : Rickets :: Vitamin C : _____.
3. Iodine : Goitre :: Iron : _____.
4. Cholera : Bacteria :: Smallpox : _____

V. Match the following.

- | | |
|--------------|--------------------|
| 1. Vitamin A | a. Rickets |
| 2. Vitamin B | b. Night blindness |
| 3. Vitamin C | c. Sterility |
| 4. Vitamin D | d. Beri beri |
| 5. Vitamin E | e. Scurvy |

VI. Complete the diagram.



VII. Answer very briefly.

1. Write two examples for each of the following.
 - a) Food items rich in fat.
 - b) Vitamin deficiency diseases.
2. Differentiate between carbohydrate and protein.
3. Define balanced diet.
4. Why should fruits and vegetables not be washed after cutting?
5. Mention any two viral diseases.
6. What are the main features of a microorganism?

VIII. Answer in details.

1. Tabulate the vitamins and their corresponding deficiency diseases.



ICT CORNER

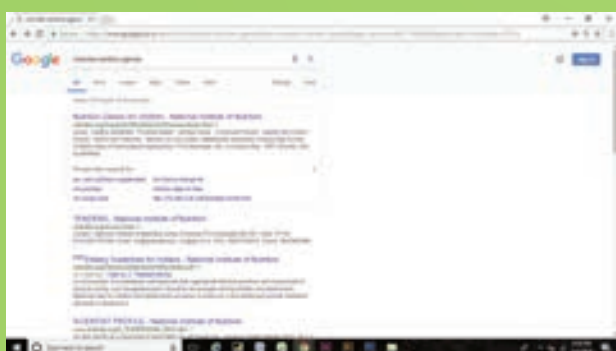
Balanced food

Play with pyramid game



Steps:

- To learn and know more about balanced food, Go to google or browser and type ninindia nutrition games
- When the homepage opens click pyramid game
- drag and drop the each food item in the pyramid.



URL:

<http://ninindia.org/Amulya%20Nutrition%20Games/index.html>

*Pictures are indicative only

